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## AN ASTRONOMICAL LANTERN.

BY E. B. KNERR, MIDLAND COLLEGE, ATCHISON.

We all remember how unsatisfactory were our first attempts to trace the positions of the several constellations in the heavens, and then, after we had found them for ourselves, how difficult it was to point out the stars to others and feel quite sure that our friends were looking at the ones we desired them to see.

The object of the lantern here presented is to obviate this difficulty, and enable one to locate the constellations and principal stars in a little while by means of an illuminated map.

The lantern consists of a box of suitable size, *i. e.*, about 10 inches high by eight wide and six deep, made of light wood or tin on all sides, except the front, where it should be so constructed that a glass plate 8 by 10 inches may be inserted. The top and bottom of the box should have numerous perforations, to admit of air for a candle or lamp employed on the interior to illuminate the map. The map should be made of stiff white paper, the positions of the stars marked by ink, and the stars of different magnitude properly distinguished. Fine ink lines should connect the several stars of each constellation and the name of the group should be printed near by in small, distinct letters. The map should be circular in form, seven inches in diameter, with the center corresponding to the zenith, and the circumference to the horizon. The glass plate in front of the lantern should have a hole about one-eighth inch in diameter bored through its center, through which a wooden key may pass. To this key the map should be fastened at its center on the inner side of the glass, in such a way that it will revolve when the key is turned. One such map for each month of the year should be constructed, representing the appearance of the heavens at about 9 o'clock in the evening. These maps may be copied from published charts. The north, east, south and west margins should be properly marked.

If now, for example, it is desired to study the constellations in the north, the proper map for the season of the year should be fitted to the interior of the lantern and turned about by means of the key at the center, until the edge marked "north" is lowest down. The observer then faces the north with the lantern resting or held directly before him, remembering that the center of his map represents the zenith and the lowest part the northern horizon. Then will the stars of the northern heavens occupy positions corresponding exactly with those marked on the lower half of his map and they may be recognized with the utmost ease.

Should he now desire to study the eastern heavens, he faces the east and turns the map by the little key until the limb marked "east" is downmost, and again he has an exact picture of the sky before him; and thus with all parts of the heavens in turn.

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PROBABLE TEMPERATURE OF THE SUMMER IN LAWRENCE, KAS.

BY E. C. MURPHY, LAWRENCE, KAS.

Probably most of us have heard the remark that, if the winter is mild the summer will be cool, and if the winter is cold the summer will be hot. The basis of this saying is, of course, the fact that the mean annual temperature of any place is quite nearly constant. If the mean annual temperature were exactly constant, then, if